STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
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DAVID F. HALES, Director

176116

July 31, 1990

Mr. Chuck Wilk, RPM
U.S. EPA, Region V
230 S. Dearborn Street
Chicago, Illinois 60604

RE: Comments on HiMill Draft Remedial Investigation (RI) Report

Dear Mr. Wilk:

Attached to this letter are comments prepared by Michigan Department of Natural Resources (MDNR) staff on the draft RI report prepared by Techna Corporation for HiMill Manufacturing Company. I wish to emphasize that these comments do not constitute a complete review of the report. The reason for this is that the report was rife with mistakes, inaccuracies, inconsistencies, and errors. For example: The presentation of the site geology and hydrogeology was poor, especially with respect to the perched zone. The characterization of the continuity of the zone of low permeability at depth was unacceptable. Misleading and/or inaccurate terms were used in the document such as "aquaclude" which must be supported by substantial evidence which was not presented in this report; and "surficial groundwater" which is misleading; groundwater and surface water should be distinguished in the report. The static water level contour maps are of poor quality and do not accurately represent water surfaces. We believe if they were done correctly, background for the upper saturated zone and intermediate zone could be determined. Calculations of background numbers for contaminants are wrong; entire sections of the text contain data summaries that do not contain the same background numbers as Techna's figures and tables. No explanation of the analytical flags was included in the document which made it impossible to evaluate their data summaries. One essential appendix was missing from the draft and important pieces of data were missing from other appendices. There are also sections that appear to have been drafted very hurriedly and do not explain or justify decisions or conclusions that Techna makes/draws sufficiently for us to evaluate.

Quite frankly, we discussed returning the draft report to US EPA with the recommendation that it be returned to the contractor for redraft before we attempted to review the document. In the end, we did attempt to perform the review and prepare comments. The majority of the comments are pointing out errors, inaccuracies, and mistakes that must be corrected before we can evaluate the results of the RI.

MDNR has spent a considerable amount of time trying to review the document and as you can see, there are numerous comments. In the interest of time, we have attempted to keep the comments brief and to the point without extensive discussion of each of our concerns. US EPA and MDNR should discuss some of the comments in greater detail prior to forwarding them to HiMill.

In addition to our not being able to complete a final review of the document, I did not request our staff toxicologist to conduct a review of Section 5: Contaminant Fate and Transport, or Section 6: Baseline Risk Assessment, as we normally would at this time. My reason for this is that with all of the problems with the document I have some doubt that these Sections will remain unchanged and I would rather not request a lengthy review of material that may change.

For all of these reasons, I am recommending that a second draft of the RI report be requested from HiMill (Techna) for agency review when they have made corrections to the document. I feel that the poor quality of this draft precludes going from this stage to a final report without a second draft.

Debbie Spakoff and I were able to reach conclusions on a couple of issues at this time: First, since some groundwater is moving generally in a westerly direction across M59, and there is some evidence of impact by HiMill on the aquifer, we feel additional data points in this area would be beneficial. Second, there is also minimal data south of HiMill between the plant and the "north arm" of Waterbury Lake. Perched water appears to be moving in this direction also. The report does not make clear where Waterbury Lake water and sediment samples were collected. There may be a data gap in this area also. Finally, we concur that the scope of the well water sample analysis should be expanded. We concur that all of the wells should be sampled and analyzed for volatiles. However, with the exception of silver which does not appear to be a significant problem at the site, based on the information we have, we see no basis on which to suggest dropping any of the other "short list" metals from the second round of sampling. In fact, there are two or three metals that it may be appropriate to add to the short list. I would like to discuss this with you before a response is given to HiMill.

When you have had a chance to review this submittal, please give me a call to discuss this matter further. Thank-you.

Sincerely

Deborah Larsen
Superfund Section
Environmental Response Division
517-373-4825

Attachments
cc: W. Bradford, ERD
J. Linton, ERD
D. Spakoff, ERD
Detroit District Office, ERD
File

Column 1 is the comment number

Column 2 is the page reference

Column 3 is the location on the page reference or figure or table reference:
P - Paragraph F - Figure T - Table

1.	p. 3	P. 2	Reference is made to an "elevated plain" south of the site. However, the site map shows that no elevated plain exists south of the HiMill building.
2.	p. 6	P. 1	A sentence in the paragraph states that no tin-lead solder has been used at HiMill. An activity report in the MDNR files dated 4-20-72 indicates that during a plant inspection, HiMill personnel informed the writer that some lead was used in their manufacturing process.
3.	p. 7	P. 1	The sentence stating that "MDNR directed" the wells to be abandoned is not correct. The Michigan Department of Public Health (MDPH) "directed" that the wells be abandoned. MDNR provided comment as to the correct abandonment procedure.
4.	p. 8	P. 3	Techna still has April 1976 as the date of the MDNR WQD water-sediment study. This study was performed in 1978.
5.	p. 9	P. 3	The first sentence in this paragraph does not make sense. I believe they need to delete "to" and insert "the".
6.	p. 11	P. 1	Superfund Section staff of the MDNR interpret language in the 1984 MDNR staff study of the area to mean that no surface water connection existed at the time of the study.
7.	p. 14	P. 5	Replace the last sentence of this paragraph with the following sentence: The MDPH concluded that the analytical results indicated there was no contamination in the seven wells at the time they were sampled.
8.	p. 15	P. 1	Sentence number 2 states that the work plan, safety plan and QAPP were approved in January 1990. Was a letter of approval sent to HiMill? If so, I do not believe MDNR was copied on the letter. Please provide a copy of this letter of approval for our files.
9.	p. 15	P. 6	Typo: Change "Section 4.0 presents and" to "Section 4.0 presents an".
10.	p. 17	P. 2	Change last sentence in paragraph to the following:

"The Michigan Department of Natural Resources also provided field oversight."

11. p. 18 P. 4 This comment applies to the entire document: The wetland on MDNR property adjacent to HiMill is referred to by different names throughout the document. This is unacceptable as it results in confusion for the reader. A single title for the wetland must be selected and used throughout the document. Since Techna used the abbreviation TP for target pond on the maps when referencing wetland sample locations, we suggest that they stay with that reference and refer to the wetland as target pond throughout.

12 p. 19 F2-1 This map must be changed to show the locations of the sediment and surface water samples collected in Waterbury Lake.

13 p. 21 P. 3 Please address the fact that metals were found in the field blanks. Specifically, what does Techna feel is the reason for these metals in the blanks?

14 p. 23 F2-2 The symbols used to delineate TAL Inorganic vs Short List Metals are very difficult to differentiate between. I cannot determine whether some of the samples collected at the grid intersections are TAL samples or Short List samples. I prefer the symbols used in the Tech Memo on Figure 5-1.

15 p. 28 P. 2 Typo-last line of paragraph: delete "were" immediately after the comma.

16 p. 35 P. 4 The first sentence states: "The Technical Memorandum concluded that all required measurements of groundwater static water levels were performed." This statement is NOT accurate. Static water level measurements must be taken every three months for a period of one year as stipulated on page 30 of Section 2 in the work plan. (Techna elected to also measure the static water levels once per month for three months.) The above referenced sentence must be revised to make it clear that three sets of static water levels remain to be taken during the next nine months.

17 p.39-? T3-1 There are errors in this table. See D Spakoff's comments also.

18 p. 55 P. 2 Reference is made here to Appendix H. Appendix H was not included in the draft RI report and to my knowledge no explanation was made by Techna as to why it was missing.

In order to review the draft RI, I used Appendix A from the Tech. Memo. I recognize that Techna may make

changes to the Appendix. However, my choice was to use Appendix A, or to not review the report.

19 p. 56-65 P2 on

My calculations do not concur with a number of Techna's calculations in Table 4-1. I came up with different means, standard deviations and the mean-plus-two-standard deviations for both nickel and silver; and a different standard deviation for zinc, from those Techna has in Table 4-1. (Note: The standard deviation for zinc in Table 4-1 is incorrect; however, the calculation for the mean-plus-two-standard deviations is correct.)

In any event, the text in Section 4, which is also repeated in Section 6, is completely incorrect. The means and standard deviations appearing in the text on pages 56 and 65 are not the same means and standard deviations that appear in Table 4-1. Therefore, the background concentrations that appear in the text are incorrect. Techna goes on to summarize the data using the wrong background numbers so all of the summaries are incorrect. In addition, Techna incorrectly identifies the maximum background concentration for each analyte. (It appears that the maximum concentration identified in the text is the concentration of each specific analyte from the sample identified as sample HMS-BG4-1 which was eliminated as a background sample when it was determined that it was not representative because the concentrations of several metals in the sample were clearly higher than the general trend observed in all the other background samples.)

I will not attempt to provide all of the correct data summaries for each of the metals from the "short list". However, when the correct data is inserted into the text the result is that something like 118 "foreground" samples exceed the calculated background concentration for copper. Somewhere around 134 samples exceed the calculated background concentration for chromium. About 155 samples exceed the calculated background concentration for zinc. Approximately 124 samples exceed the calculated background concentration for aluminum, and so on.

20 p. 56 & 95

Other comments pertaining to these pages and also to the repeated text in Section 6: I found it confusing and unnecessary when the terminology was changed from paragraph to paragraph when referring to the samples. For example, in paragraph 3 the samples are referred to as "foreground locations". In paragraph 4 the samples are referred to as "stations" and then in paragraph 6 the samples are referred to as simply "locations". This comment may at first seem petty; however, when one is reviewing a technical document where each word has

			significance, changing the terms used from paragraph to paragraph unnecessarily when referring to the same thing causes unwarranted confusion. Therefore, please select one term and standardize the language throughout the referenced paragraphs in Sections 4 and 6.
21	p. 56	P 3	Sentences three and four state that there are 9 locations where the copper concentration exceeds 900 mg/kg and then goes on to list these locations. This information makes no sense to me. First, is there some significance to 900 mg/kg or was this randomly selected? Second, in examining Appendix A (H) I am not able to find a sample L3-2. Third, I find sample H7-2, but the concentration of copper in this sample is 23.90 mg/kg. Fourth, there are a number of samples that have concentrations that exceed 900 mg/kg for copper that are not included in the list in sentence four. Finally, with respect to the last two sentences in this paragraph, please define "shallow" for the purposes of plotting the data on the isoconcentration map. In other words, which samples do you consider "shallow" for the purposes of mapping the concentrations?
22	p. 65	P 1	I did not review the nickel data in this report because I understood per a telephone conversation with Mr. James Harless of Techna that <u>all</u> of the nickel data was incorrect. It appears from what Techna recently submitted to US EPA that only the water samples were incorrect with respect to the nickel data. Although I have no comments on the nickel summary at this time, I suspect that there are errors in this similar to the previous paragraphs. Please review this and make appropriate corrections.
23	p.58	T 4-2	This table is the summary of soil samples above background criteria. Please explain why sample HMS-A1-0 is included for chromium when the measured concentration is 12.40 mg/kg and the background concentration is 12.52 mg/kg.
24	p.60	T 4-2	Please explain why sample HMS-0G3-0 is included in the table for copper. The copper concentration is 8.00 mg/kg and the background concentration for copper is 8.11 mg/kg.
25	p. 61	T 4-2	Please explain why sample HMS WR01-1 for zinc is included in this table when the concentration of zinc in this sample is 28.70 mg/kg and the background concentration for zinc is 28.89 mg/kg.
26	p.61	T 4-2	Neither samples HMS XW01-0 nor HMS XW01-2 exceed calculated background for chromium but are included in this table. Please explain.

27	p. 61	T 4-2	Is sample HMS-YX12-3D a duplicate sample? Is so, where is sample HMS-YX12-3? (It does not appear in the appendix either.)
28	General Comment		Again, just to be clear, I did not review any of the nickel data in this document for the previously explained reason so I will not have any observations, questions, or comments on the nickel portion of the draft report at this time.
29	p. 62	F 4-1	I found this map to be confusing. It is not clear to me how Techna is using the data collected. There are samples that have high concentrations of copper that are located between the actual surface of the soil and the clay interface. I feel this data is significant. However, it does not appear to be included on this map. There are so few numbers or explanations on this map that I do not feel it is of much value as it exists. Techna should examine the map for accuracy and provide more detail and information on it as well as some explanation of what is plotted.
30	p. 64	F 4-3	Same comments as comment 29.
31	Appendix I		Appendix I is the summary of TAL Inorganic Analysis Results for Soils. Review of this appendix was necessary to review the text and I have some questions about the appendix so I will insert these comments/questions at this time. Appendix M contains an inorganic analysis data sheet for sample location HMS H4/I5-2. This sample is not included in Appendix I. Since there is no explanation as to why this sample is not included in the appendix, I have assumed it was missed in error and I am including this sample result in my review. Please add it to the appendix or explain why it is not used. Also, please explain where the sample HMS-0G1-0 was collected. Finally, all flags on this data must be defined and an explanation of what flagged data is acceptable and what is eliminated and why. It is impossible to assess the accuracy of the text when we don't have a complete explanation of the procedures they followed.
32	Appendix I		Please provide a new copy of page one of the data-the analytical results in the last line are cut off.
33	Appendix I		The concentration of aluminum for sample G3/H4-2 is incorrect. 66.10 should be changed to 6610 mg/kg.
34	p. 66	P 1	Returning to the text now: The text states that there are two or less exceedances of background for beryllium. However, I count six exceedances. Please address.

35	p. 66	P 1	The text states there are two or less exceedances above background for cadmium. However, I count six exceedances. Please address.
36	p. 66	P 2	The text identifies three lead exceedances above background. I believe there are five: (HMS-0G1-0) 23.80 mg/kg, (HMS-0G2-0) 33.40 mg/kg, (HMS-C4-0) 21.10 mg/kg, (HMS-G7-0) 60.00 mg/kg, and (HMS-I4-2) 22.50 mg/kg. In addition, the text incorrectly states the background concentration for lead is 16.82 mg/kg instead of the correct background concentration of 19.83 mg/kg. If 16.82 had been the correct background concentration, I believe there would have been nine exceedances.
37	p. 66	P 4	I'm not clear what Techna means with the statements in this paragraph. However, since aluminum is one of the known metals of concern at this site, it appears that Techna is suggesting that vanadium, barium, and iron are also in elevated levels that relate to the contamination from HiMill's activities. If so, we should consider expanding the "short list" of metals for future sampling.
38	p. 66	P 5	Appendix J contains the summary of TCL volatile organic analysis results in groundwater-not soils data as stated in this paragraph. Also applicable in this paragraph and throughout the text, a complete explanation of all of the analytical "flags" must accompany reference to them. In this case, the writer should explain why the flagged results were not used.
39	p. 67 & 68	T 4-3	There are several errors in Table 4-3. I believe the background concentration for cadmium should be 1.26 mg/kg; the mean, standard deviation and background for cobalt should be 3.53 mg/kg, 2.95 mg/kg, and 9.43 mg/kg, respectively. The background concentration for iron should be 11,192.6 mg/kg; the standard deviation for magnesium is 424.77 mg/kg; the mean and background for mercury should be .06 mg/kg and .18 mg/kg respectively; the mean, standard deviation and background numbers for nickel according to the data are 4.13 mg/kg, 2.17 mg/kg, and 8.46 mg/kg respectively. There are errors in the silver, sodium and cyanide calculations also.
40	p. 70	T 4-4	Flags should be identified on this table or referenced to an appendix where an explanation can be found.
41	p. 73	P 1	Second line, change the word "screen" to casing.
42	p. 73	P 4	What is meant by the asterisk after 149.0?
43	p. 74	T 4-6	Please explain why metals results from groundwater

samples flagged with an N are not used when metals in soils flagged with an N are.

I did not review the nickel data.

44 p. 77 P 3 Where is the summary of all surface water results?

45 p. 77 P 4 I find this paragraph confusing. Please make it clear throughout this paragraph whether you are talking about sediment samples or surface water samples.

Also, please identify where the Waterbury Lake sediment and surface water samples were collected. I have reviewed Figure 2-1 which is supposed to identify the locations of sediment samples and surface water samples; however, I do not see these Waterbury Lake sample locations.

46 p. 78 P 2 A table or chart should be prepared showing all of the surface water sample data.

47 p. 78 P 4 More asterisks appear in this paragraph which I do not see defined anywhere.

48 p. 79 F 4-8 Referring to the Statistical Analysis: The only calculation with which I concur is the mean for aluminum. I have different figures for <u>all</u> of the other figures. I believe part of the problem is that <u>standard error</u> was used instead of <u>standard deviation</u>. I also assumed that the background calculations for non-detect samples would be handled the same way that the soils data was.

One other observation on this figure: 122.00 mg/kg for zinc background (BP04) seems significantly higher than what appears to be background for zinc in this area. Please address this concern.

49 p. 80 P 5 Reference is made to Figure 2-1 as showing the locations of the sediment samples. I do not see the Waterbury Lake sediment sample locations on Figure 2-1.

50 p. 82 P 1 Line two; delete the word "above".

51 p. 82 P 3 Referring to sentence one: I count six samples exceeding the calculated background for beryllium. I believe there are six samples exceeding background for cadmium. Five samples exceed the background concentration for lead. Please address.

52 p. 82 P 3 Sentence two: The number of instances that a metal occurs on site <u>alone</u> is not justification for making the statement that the metals "need not be addressed further". The levels at which these metals occur and

			the sample locations, regardless of number of instances, are also of importance. Please provide evaluation of the concentrations at which beryllium, cadmium and lead were found as well as the locations and include this discussion with your position that the metals are not of concern.
53	p. 82	P 3	The second half of this paragraph: I do not concur with what Techna has stated in this paragraph. The background samples at this site were selected in the field to assure that they would be representative and acceptable to all parties. Further, seven background samples should be a sufficient number of samples to establish background at this site. It is unacceptable to dismiss valid analytical data on the basis that there may be some other higher levels of certain contaminants if we look long enough. If HiMill wishes to collect additional samples at additional cost and at additional delay in the completion of the RI/FS, they should submit such a request along with an explanation of their position and justification for additional sampling to the US EPA for consideration.
54	p. 83	P 1	While it is true that peat may have higher levels of some metals MDNR staff who reviewed this paragraph and the well logs see no support in the data submitted for this conclusion.
55	p. 83	P 3	I would prefer to wait for the second round of samples before dismissing the toluene data. There also is a typo in this paragraph.
56	p. 83	P 5	Same comment as #55 except with respect to chlorobenzene.
57	p. 84	P 2	Background will have to be established for groundwater at the site. Valid analytical data cannot be dismissed with a statement such as the one in line two of this paragraph.

REFER TO COMMENTS OF DEBBIE SPAKOFF FOR HYDROGEOLOGICAL REVIEW

58	p. 85	P 2	Regarding the dismissal of the analytical data; refer to comment number 57.
59	p. 85	P 3	Before TCL volatile organic analytical data can be "eliminated from consideration" Techna will have to put more time into an explanation as to why various data can be eliminated than to write it off with one sentence. Please describe in detail the rational for eliminating the organic data.
60	p. 85/86	P4&P1	Please elaborate considerably on the analytical results

for groundwater samples collected in the deep aquifer. What inorganic contaminants were found; what concentrations? What organics were detected and at what concentrations? Explain in detail why all of the results were eliminated.

61 p. 86 P 2 Again, the dismissal of the analytical data without a more thorough explanation of what data was found is inappropriate.

62 p. 86 P 3 Where was Waterbury Lake sediment sample WL-02 collected? It would also be appropriate to include in this paragraph that aluminum concentrations were elevated at depth.

63 p. 86 P 4&5 TP-11 is not mentioned in either of these paragraphs, yet it has very high concentrations of metals in both samples collected at this location. Why isn't it included?

64 p. 87 P 3 I can't assess this paragraph until I know the locations of the samples collected in Waterbury Lake.

REVIEW AND COMMENT BY MDNR SUPERFUND TOXICOLOGIST COULD NOT BE PERFORMED AT THIS TIME DUE TO THE NUMEROUS ERRORS AND PROBLEMS WITH THE DRAFT RI. THE COMMENTS THAT FOLLOW FOR SECTION 5 & 6 ARE NOT TOXICOLOGICAL COMMENTS.

65 p. 89 P 2 Typo line two: Change "in" to "is".

66 p. 90 P 1 Line two: I believe this is supposed to be "partition".

67 p. 93 P 4 Typo: toward end of page-spacing.

68 p. 94 T 6-1 Labeling of this and all other tables should be off-center or lower because when the holes are punched the label on the table is lost. Also, Depth 2 and Depth 3 should be defined on this table.

69 p. 95 & 96 These two pages are a duplication of the text in Section 4. Why is it necessary to repeat the same information?

All of the errors that occurred in Section 4 with respect to these pages are repeated here.

70 p. 98 P 3 Change top of "screen" to top of "casing".

71 p. 99 T 6.2 The table indicates that zinc was detected in the deep aquifer at 7.7 ppm. This information is not on Table 4-6. Why?

72 p.108 P 3 Line two, typo: concenr should be concern.

73 p. 108-109 Section 6.2.5 is a repeat of Section 4.4.1. First, I

			don't see the value of repeating the same text. In any event, the same errors and comments apply to this section as were made for Section 4.
74	p.110	P 1	I don't understand the purpose of sentence number 2. Also, there is a typo in line three.
75	p.110	P 2	Same comment as previous about chlorobenzene.
76	p.110	P 4	This is a duplication of the text from page 84. The same comments made on this text in Section 4 apply here and on page 85.
77	p.111	P 3	I concur that sampling of additional wells is appropriate based on the results obtained during the first round of sampling. This should be discussed separately from the review of the draft RI.
78	p.111	P 4	Same comment as previously made with respect to establishing background numbers for groundwater.

I have noted numerous other items in the text throughout these pages, but so many of them are repetitious from Section 4 that I am not going to repeat them. Techna should make appropriate changes throughout the document.

79	p.145	P 4	The mud-minnow that was found was dead.
Appendix D			Errors observed in the data: Column FEET EAST for DW02 should read 4835.83. FEET NORTH column for SW03 should be 5493 not 549. TOC ELEVATION column for SW21 should be 1012.93.
Appendix H			Where is it? In using Appendix A from the Tech. Memo. I found that numerous analytical results were missing from the table. Also, the units should appear on the table.
Appendix I			Why aren't the analytical results for sample H4/I5-2 included in the table? Also, units should appear on the table. The first page of data needs to be recopied because the bottom line of data got cut off. Finally, sample G3/H4-2: aluminum concentration is 6610 not 66.10.
Appendices K & L			The units should appear on both of these summaries.

This concludes my initial comments. Also attached are the comments of the project geologist. One final comment/reminder: No comments are included at this time on Sections 5 & 6 from our staff toxicologist. Although she will attempt to review the draft at this time, she cannot really conduct a thorough evaluation until the report is corrected.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

July 20, 1990

TO: Debby Larsen, ERD

FROM: Debbie Spakoff, ERD

SUBJECT: Comments on the Hi-Mill Manufacturing Company Draft Remedial Investigation Report and Baseline Risk Assessment

PAGE	PARAGRAPH	SENTENCE	COMMENT
3	2	3 & 4	There is no "elevated plain" south of the Hi-Mill property.
3	5	2	"(soil)" should be eliminated from sentence.
5	5	1	Add glacial clays to lacustrine clays.
5	5	2	Eliminate "aquaclude". Aquatard may be used instead.
5	5	3	Substantiate "artesian aquifers" within the general region.
6	2	4	Explain how the second lagoon was constructed.
6	2	5	Add the fact that both lagoons commonly overflowed into an uncontained area.
6	3	5	If any soil samples were collected prior to backfilling, state so and include lab results.
7	2	1	The septic system is located southeast of the main building not southwest.
8	1	2	The mean concentrations are not useful. Information including individual sample concentrations and depth is needed.
9	4	1	Since Hi-Mill was in violation they requested permission from the DNR to do a removal.

PAGE	PARAGRAPH	SENTENCE	COMMENT
11	1	1	MDNR report concluded that Waterbury Lake and the Target Wetland are not connected. I agree that they are not directly connected.
11	2	8	The perched groundwater flow between Numatics and the wetland was southwest. The flow direction of the water table aquifer was unknown.
11	2	9	What "area" was a recharge zone?
14	2	1 & 2	Please provide a copy of the SWL measurements.
18	4	1	Figure 2-1 does not define what TP, OG and BG are. It also does not include the surface water and sediment sample locations in Waterbury Lake or Background Pond as stated.
18	4	3	The three TAL sediment and water samples are not shown on Figure 2-1.
18	5	2	Have the apartments impacted the pond? Is there a septic system?
22	1	1	Southeastern water supply well should be southwestern.
22	3	1	Explain what "unsurfaced area" means.
22	7	1	No sample was collected at G4/H5.
22	1	-	Figure 2-2 and Figure 2-3 do not have off-grid sample locations, outside the fence.
28	1	1	At which wells was a tremmie pipe used to grout the borehole?
28	2	1	Water quality may have been affected by the development method implemented.
28	2	3	Which wells were bailed to dryness and how many times?
29	2	1	Eliminate "Surficial" when referring to groundwater. Change "marsh" to Target Wetland or whatever name is chosen. Be consistent.

PAGE	PARAGRAPH	SENTENCE	COMMENT
29	2	-	An objective of the hydrogeological study was to define and characterize contamination on site.
31	2	2	Except for the Existing Wells, they were sampled prior to 14 days since they were not recently installed.
33	1	1	Eliminate "within twenty minutes from time of collection".
33	2	1	Sentence misleading. Contamination does not always migrate in the direction of groundwater flow.
33	3	1	Static water levels that were collected during the R.I. may not be considered as part of the required rounds of SWL measurements.
34	3	1	The Bouwer and Rice Method can not be applied at wells demonstrating artesian conditions. Include ALL parameters used in equation for wells set in the unconfined zone. Hydraulic conductivities must be recalculated for artesian wells using an appropriate method.
37	1	2	Seasonal fluctuations in precipitation may cause water levels to rise thus connecting the main body of Waterbury Lake to the north arm.
37	5	5	The field observation suggests an intermittent connection between the Target Wetland and the wetland to the north of M-59.
38-42	-	-	These pages contained several errors. Corrections have been made verbally between Grant DeWitt and myself.
43	3	1	Define "exposed groundwater surface". Does this mean that the water table intersects the surface at this location? If so, please support the statement with evidence.

PAGE	PARAGRAPH	SENTENCE	COMMENT
43	3	3	The shallow groundwater map (Figure 3-3) has numerous errors including contours which can not exist and others that are very inaccutate. The map does not indicate which wells were used to contour which makes interpretation impossible.
43-45	-	-	The Geology Section fails to address the perched water.
45	1	2	The medium to coarse sands were encountered at many additional locations.
45	2	3	The thickness of the deep aquifer is unknown; it may be much greater than ten feet.
45	4	2	Appendix F is missing over twenty soil boring logs.
45	4	-	"White chalky streaks and lenses" appears in Appendix F but is not included in this paragraph. Please include, and define it.
47	2	5	There is no evidence of a clay ridge between Hi-Mill and Waterbury Lake.
48	1	3	SW-5 is set in fill material. This is the only well set in this material. It can not be considered a zone as described.
48-49	-	-	Shallow wells SW-18 and SW-19 appear to be set in Zone III not Zone VII. Hydrogeologic Zones I/II and II appear to be the same zone.
50	-	-	Figure 3-3 is inaccurate as mentioned earlier.
52	-	-	Figure 3-4 is inaccurate. IW-5 is not included.
53	-	-	Figure 3-5, the ground water elevations can not be read.
57	-	-	Figure 4-1, units are missing.
63-64	-	-	Figures 4-2 and 4-3, units are missing.
66	5	3	Flagged sample results are useful and should be included in Table 4-4.

PAGE	PARAGRAPH	SENTENCE	COMMENT
80	3	-	Given the high analytical results for ammonia and nitrate/nitrite, the Background Pond does not appear to have been a good location to collect background samples. Do the condominiums have a septic system?
80	4	3	Figure 2-1 does not indicate where sediment samples were collected in Waterbury Lake.
82	1	-	The area south of the production facility and north of Waterbury Lake also needs to be included in the contamination assessment, risk evaluation and remedial feasibility planning.
82	2	2	The off grid samples outside the fence also contained elevated levels of inorganics.
82	3	10	If background soil samples are not representative, then the entire interpretation of contamination is skewed and invalidates what is and is not acceptable.
84	2	2	A background groundwater location can be established. Discarding species as contaminants since background has not been established is unacceptable.
84	4	1	The shallow saturated zone is not an aquifer.
84	4	7	Additional contamination exists south of the facility.
85	2	2	Background can be determined. Contaminant species can be identified at this time.
86	2	6	Metal contamination of surface waters near Hi-Mill is a concern. How else would contamination spread throughout the Target Wetland's sediments?
87	3	4	There is insufficient evidence to prove that contaminants of concern are not present in Waterbury Lake.
83	1	2	Contaminants migration may occur through chemical dispersion.

PAGE	PARAGRAPH	SENTENCE	COMMENT
88	1	4-9	Surface water run-off must be considered as much more than "minimal".
90	2	5	Surface water run-off is another route of contaminant transport.
90	2	6	Groundwater migration is also suspected to be transporting contaminants in the intermediate groundwater.

Deborah Jansen
for Debbie Spakoff